we easily ascertain that the volume of gas from 1 kilogramme C will be 1*86 cubic metre COa+3'72 cubic metres H=5'58 cubic metres. The gases reviewed under the headings (e) and (/) are called water-gas and are not produced in this purity in practice.

(g) STE.Ur-AlR GrAS.1

A mixture of the gases reviewed under the headings (a), (I), (e) and (/) is termed steam-air gas. One can regard this as a mixture of gases produced individually in separate apparatuses, or also as by production in a single apparatus in which the carbon is, by the joint influence of air and steam, converted into gas. It follows, therefore, on reflection that for each volume of oxygen which is obtained from air that this must be accompanied in the gas by a corresponding volume of N, whilst in the oxygen which was derived from the decomposition of water, a corresponding amount of hydrogen must be present. The quantity of nitrogen in the gas will, therefore, be no longer according to formula (11), N=3*762 x
32+ —V but will be less to the extent of 3*762 times the
quantity of 0 which is contained in the water. This is,
TT
according to the formula (13), =-99 and herewith furnishes the characteristic as under: —

Example. — A gas of the composition 8 per cent., COa, 24*9 per cent. CO, 11*0 per cent. H, and 56'1 per cent. N, as analysed, must contain 8+12"45 —5*5 = 14"95 0 which x 3-762 = 56*2 per cent. N. This proves the gas to be pure steam-air gas.

1 The Germans use the expression " Mischgas," which has not, but should have, an English equivalent. Such a word avoids much verbose explanation being involved. The translator has adopted the expression " steam-air gas " for the purposes of this book, but begs to direct attention to the desirability of a suitable equivalent to the G-erman word being coined and adopted generally. The formula for this gas then from (16) is (TRANSLATOR.)